



Bedford Regional Water Authority



Annual Report & Consumer Confidence Report 2013

Providing Quality Service To Everyone



What is the Bedford Regional Water Authority?

The Bedford Regional Water Authority (“Authority”) was created pursuant to the Water and Sewer Authorities Act Chapter 28, Title 15.1 of the Code of Virginia of 1950, as amended. In accordance with the Reversion Agreement executed in August, 2012, the Authority was created by the Bedford County Board of Supervisors (“Supervisors”) by a resolution dated November 14, 2012 and the Bedford City Council (“Council”) by resolution dated November 27, 2012. The new Authority combines the former Bedford Public Service Authority and the former City of Bedford Water and Sewer Department.

Three of the initial members were appointed by the Supervisors on November 14, 2012, and three of the initial members were appointed by the Council on December 11, 2012. The State Corporation Commission approved the Articles of Incorporation on December 13, 2012. The first board meeting was held on December 18, 2012. You can [view the current board of directors on the Authority’s website](http://www.brwa.com) (www.brwa.com).

Currently the Authority has [56 employees](#) and operates 24 hours a day, 7 days a week, 365 days a year to provide customers with high quality water services. Authority staff are constantly being trained on new technologies, safety issues, customer service issues and other related items to assist in achieving the organization’s goal of providing the highest quality water and the best customer service possible.



Mission Statement:

The Bedford Regional Water Authority exists to provide its customers with high quality water and wastewater services at rates that are reasonable and just. The Authority shall anticipate the needs of the greater community by continually maintaining responsive, reliable service and through systematic expansion whenever economically possible.



What to Expect From This Report

This report combines the Consumer Confidence Report (“CCR”) with the Annual Report of the Authority for 2013. This report contains operating data from first half of the year from the City of Bedford and the Bedford County PSA, as well as data from the second half of the year from the Authority. The desire with this report is not only to dispense the information required by law, but to also give customers a comprehensive look at what the Authority has been doing throughout the past year and what to expect from the organization in 2014.

The Consumer Confidence Reporting section of this document for calendar year 2013 is designed to inform customers about their drinking water quality. The goal is to provide customers with a safe and dependable supply of drinking water, and the Authority wants customers to understand the efforts made daily to protect the water supply. The quality of the drinking water must meet state and federal requirements administered by the Virginia Department of Health (“VDH”). The presence of a particular constituent does not mean that the water is unsafe to drink; however, if something is detected above the maximum level, the PWS must discuss the potential health effects and actions taken to correct the problem.

In the following pages you will see:

- Summary of what the Authority has accomplished in 2013
- Authority goals for 2014
- An summary of the consolidation process
- An overview of the customer population of the Authority
- Information about the quality of your drinking water (CCR information)
- Information about the Board of Directors
- Who to contact with questions





Letter From the Executive Director, Brian Key

Calendar year 2013 was a very eventful time for the Bedford Regional Water Authority. The Board of Directors quickly began working in the first half of the year to lay the foundation for the new Authority; with the merger being fully effective on July 1, the Board drafted, approved, and adopted the policies that would need to be used on the first operating day. In the same 6 month period, the Board also directed, reviewed, and adopted the first operating budget for the fiscal year July 2013 - June 2014. This required a considerable number of long meetings for the Board of Directors, as well as a lot of meeting with the committees to provide numerous recommendations to the Board.



While the Board was forming the governing documents for the Authority, from January until July the staff from the Bedford County Public Service Authority and the Water & Sewer Department from the City of Bedford were working on preparations for merging our systems together; we studied how to merge the customer records together, how to blend our employees together, and how consolidate our financial systems. It took considerable effort from a lot of people to help bring together the new Authority; properly blending together two different agencies proved to be quite challenging. Looking back at it all now, I can tell you without a doubt that it was well worth the hard work. We have a top notch organization, from the board members to the office employees to the employees in the field working to operate and maintain the water and sewer systems.

Since July 1, we have continued to blend our operations together; this has allowed us to find better ways to do business. We have found ways to more efficiently run the Central Water Treatment plant using a single long shift instead of two shifts that run around the clock shifts; shutting down the plant at night has improved scheduling issues, and has opened up some extra time to perform tasks that could not have otherwise been done with the previous night shift schedule. We have made a lot of improvements to the Central Wastewater Plant that had been needed for many years. We have greatly improved our zinc handling capabilities at the Moneta Wastewater Plant, making it possible to meet what previously seemed like an impossible regulatory limit. Our maintenance crews have blended together as a unified team, sharing their time, vehicles, equipment, parts, and knowledge so that we run more efficiently than ever before. The Customer Service department has managed to read and bill about 44% (about 3500) more customers for the Central district, with the same small staff that use to service County only customers. Engineering has seen a large jump in the number of design plans and plats to review, all while managing the tremendous work involved with the proposed Smith Mountain Lake Water Treatment project. We have installed a lot of new computers, while also building our BRWA network to tie them all together. And the Administration staff worked diligently to support the Board and all of the employees so that they can focus on performing the work that is required.

There is still a lot of work to do. The Smith Mountain Lake Water Treatment Plant has tremendous potential to greatly reduce our long term operating costs; it also requires a lot of planning and a lot of coordination. The Authority needs to perform some long range planning, including capital improvement planning and rate evaluations. We are required, through the consolidation agreement, to equalize the rates between all of the service areas, so that the customers in the Forest, Lakes, Central, Montvale, and Stewartville areas all pay the same charges for water and sewer service; we intend to adopt a plan that shows how this can be accomplished in the next 9 years. Some of our systems have pipes in the ground that are reaching the end of their expected useful life; we need to develop a plan showing how these pipes can be repaired or replaced, with minimal impact on our customers rates and the quality of service.

In summary, we have accomplished a lot in 2013, and we look forward to continuing that trend in 2014. We remain focused on fulfilling our core value, in "providing quality service to everyone".



The Outcome of Consolidation

On July 1, 2013, the Bedford County Public Service Authority and the City of Bedford Water and Wastewater systems combined to create the Bedford Regional Water Authority. This was a result of the City of Bedford reverting to the Town of Bedford. The process of combining the two utilities was a result of many months of hard work by the City (now Town) of Bedford, the former Bedford County Public Service Authority, the Bedford County Board of Supervisors, and the newly appointed BRWA Board of Directors (as of December 2012).



The following is a review of some of the changes that occurred as a result of consolidation:

- Both former Public Service Authority and City of Bedford employees merged into the Bedford Regional Water Authority. Every position was carried over to the BRWA, as there were no duplications of services or duties and every function performed was still needed under the new Authority.
- A new board of directors was formed in December 2012.
- The new board approved a new operating policy manual for the Authority.
- A new rate structure was approved that put the Authority on track for year one of ten to equalize the former PSA and City rates by 2023.
- New signs for the BRWA were posted on all sites and vehicles.
- The website was updated to www.brwa.com.
- All billing records were converted and merged into the BRWA and billing system.
- All computers, phones, domains, servers, and electronic systems were converted to the BRWA.
- Bank accounts, vendors, and assets were transferred to the BRWA.
- Plant permits were changed to the BRWA.
- Inventory of all supplies was merged together into one system.

As a result of this hard work, consolidation went very smoothly. Although there were differences and changes that were made in forming the new Authority, most of those changes were well received. After a few months of operating under the Authority, a few practices (like inactive accounts and deposits) were found to not be the best fit for customers; the board acknowledged these customer needs, and they reviewed and changed the policies accordingly to be more customer friendly.

Now, after more than eight months into the consolidated Bedford Regional Water Authority, the Authority is running smoothly. There will be times when practices will have to be reviewed again, as customers needs and Authority needs change; however, the Authority is a customer driven business that listens to the needs and wants of the customer. Everything that the Authority does is driven by its core value of "Providing quality service to everyone".



The Authority appreciates all of its customers and vendors patience and understanding throughout the consolidation process. Thanks to everyone who made this change possible!



Overview of Facilities

- 5 Water Treatment Plants
- 2 Water Intake Stations & 1 Reservoir
- 2 Water Booster Stations
- 10 Water Storage Tanks
- 3 Wastewater Treatment Plants
- 21 Sewer Lift Stations
- 2 Administrative Office Buildings



The Environment and Bedford Water

It is a well known fact that there is only so much water on this planet, and that we just keep recycling it year after year. This means it is essential to care for our water and treat it so no harm comes to this valuable resource, the people who need it, or the natural ecosystems that surround us. The Authority recognizes the importance of this essential resource, and we are passionate about treating water in a safe way for both people and the environment. Below is a partial listing of how we play a part in keeping a clean and thriving environment and a healthy community.

- The water that we treat and put back into streams is required to be below the levels the Department of Environmental Quality sets. These levels ensure that the water is safe for all organisms after it enters back into streams.
- The water we take and treat for our customers goes through a filtration system and a disinfection process that makes the water safe and ready to drink.
- The Authority recognizes the importance of protecting our communities, not only through clean water and eco-friendly processes, but by also providing water to fire hydrants for emergencies as they arise.





2014 Goals

Each year the Authority creates a list of goals for the Authority, each department, and each individual. These goals are to put the Authority on a clear path on how to continually improve.

This year the Authority goals include:

- ◆ Adopting a rate structure that includes provisions for the next nine (9) years of equalization.
- ◆ Continue the planning of the Smith Mountain Lake Water Treatment Plant Project (see article below for details).
- ◆ Develop a capital improvement plan
- ◆ Adopt the FY 2014-2015 budget
- ◆ Develop long range plans for the Authority



Smith Mountain Lake Water Treatment Plant Project Update

A large project the Authority has been working on this past year involves preparing to construct a new water treatment plant at Smith Mountain Lake and running a new waterline along Route 122 and Route 460. This project is going to provide a great amount of benefits to the community; some of these benefits include being able to:

- Provide redundant backup sources for the Lakes, Central, and Forest service areas
- Save over \$28 million over 50 years by producing water instead of buying it
- Save approximately \$8 million in needed updates to the current treatment plant at HighPoint
- Allow for more efficient service to customers
- Increase fire safety with the installation of additional fire hydrants
- Provide the ability to provide water service along new waterline
- Increase service to Franklin County through partnership with Western Virginia Water Authority
- Be able to help region in times of need with connections to Franklin County, the City of Lynchburg, and Campbell County

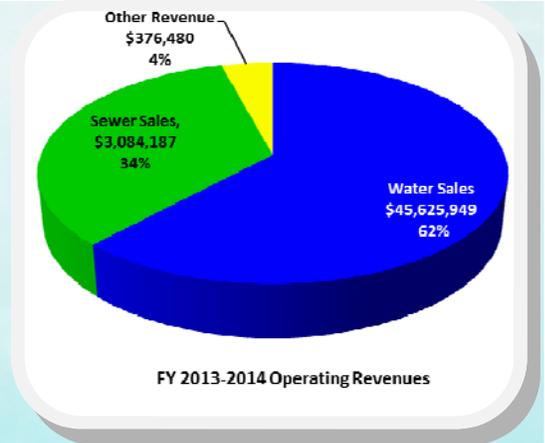
This project is still in the planning period; therefore there is still considerable work involved in the years ahead. There are still many steps and decisions to be made in this process. Changes could be made to the overall scope of the project. Some elements may be completed while others may be revised or postponed. The best way to keep up-to-date with the project is to follow along on the [project's webpage](http://www.brwa.com) on www.brwa.com. While there you can also sign-up for the project's email list to receive progress on the project delivered to your inbox.





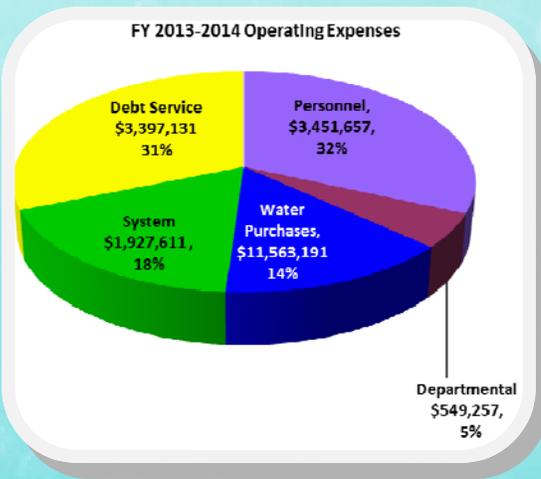
2013 Financial Review (Fiscal Year 2012-2013 for the BCPSA)

For the fiscal year ended June 30, 2013 the Authority experienced an increase in operating revenues of \$659,784, compared to a decrease of \$148,217 from the previous year; factors that contributed to this were facility fees were almost double that of the previous year and review fees increased due to increased development in the area. Operating expenses increased by \$168,949 compared to an increase of \$69,383 from the previous year; this includes increased purchases related to the combined systems and salaries and employee benefits increases in preparation of the consolidation on July 1, 2013. Developer Dedications totaled \$105,542 for FY 2013, compared to \$226,872 in the previous year.



The FY 2013-2014 budget was the first for the Bedford Regional Water Authority. Being that this is the first budget for Bedford Water there were various challenges, with the main challenge being the merging of two separate systems with different rate structures into one system with rates that will be equalized over a ten year

period. The rates included in this budget are very close to those recommended by the rate study that was commissioned by the City and County of Bedford that were part of the Consolidation Study. The current budget for the Authority includes the facility fees in operating revenues, which is a practice that the Bedford County Public Service Authority had not done in previous years. As Bedford Water begins operations and develops a rate equalization process it is expected that facility fees will not be included in operating revenues and set asides for capital projects can begin within the next three to five years. The Authority is currently in the process of conducting a more complex rate study and results from that study will be used to prepare the FY 2014-2015 budget.



Certificate of Achievement for Excellence in Financial Reporting

The Bedford County Public Service Authority's comprehensive annual financial report (CAFR) for the year ended June 30, 2013, was awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association of the United States and Canada (GFOA). In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we have submitted it to the GFOA to determine its eligibility for another certificate.

This is the 17th consecutive year that the Bedford County Public Service Authority has earned this certificate of achievement.



The Authority proudly displays all of its GFOA awards.



Meet the Board of Directors

The Authority board hires the Executive Director, who is responsible for managing the Authority. The Authority is composed of managers and staff specializing in Administration, Customer Service, Engineering, Finance, Human Resources, Information Systems, Maintenance, and Operations.

The times and location of regularly scheduled board meetings are the third Tuesday of every month at 7:00 PM in the Bedford Regional Water Authority Board Meeting Room located at 1723 Falling Creek Road in Bedford.



Mr. Michael Moldenhauer

Term: December 2012
to December 2015



Mr. Tom Segroves

Term: December 2012
to December 2014



Mr. Elmer Hodge

Term: December 2012
to December 2014



Mr. Walter Siehien

Term: December 2012
to December 2014



Mr. Robert Flynn

Term: December 2012
to December 2015



Mr. Carl Wells

Term: December 2012
to December 2016



Ms. Cynthia Gunnoe

Term: February 2013
to December 2016



Contact Us

Hours of Operation:

8:30 a.m. to 5:00 p.m.

Monday through Friday

Customer Service

540-586-7679, Extension 4

customerservice@brwa.com

- Water bills
- Rates and connection fees
- Signing up for service
- Disconnecting well service
- Reporting a leak or pressure problem during operating hours

Administration

540-586-7679, Extension 7

admin@brwa.com

- Board of Directors information
- Board and Committee meeting information

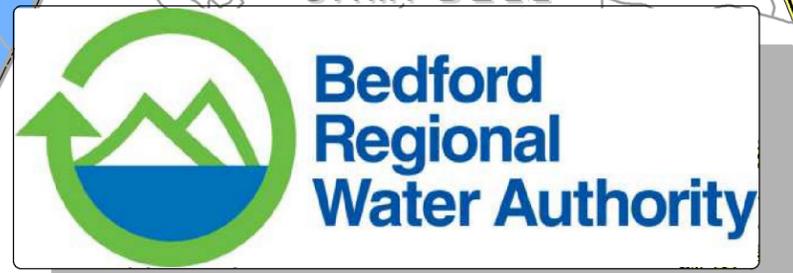
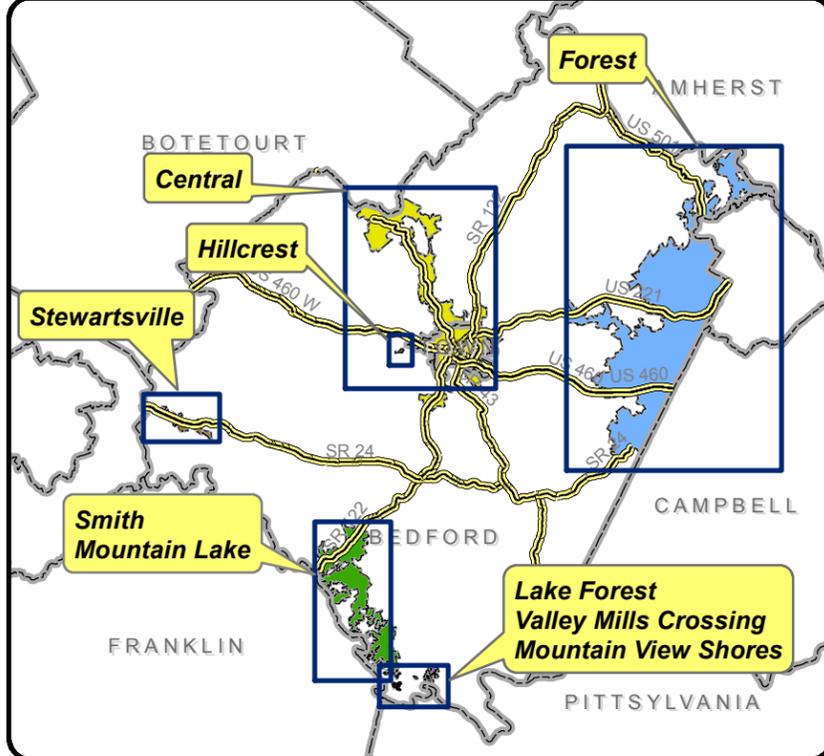
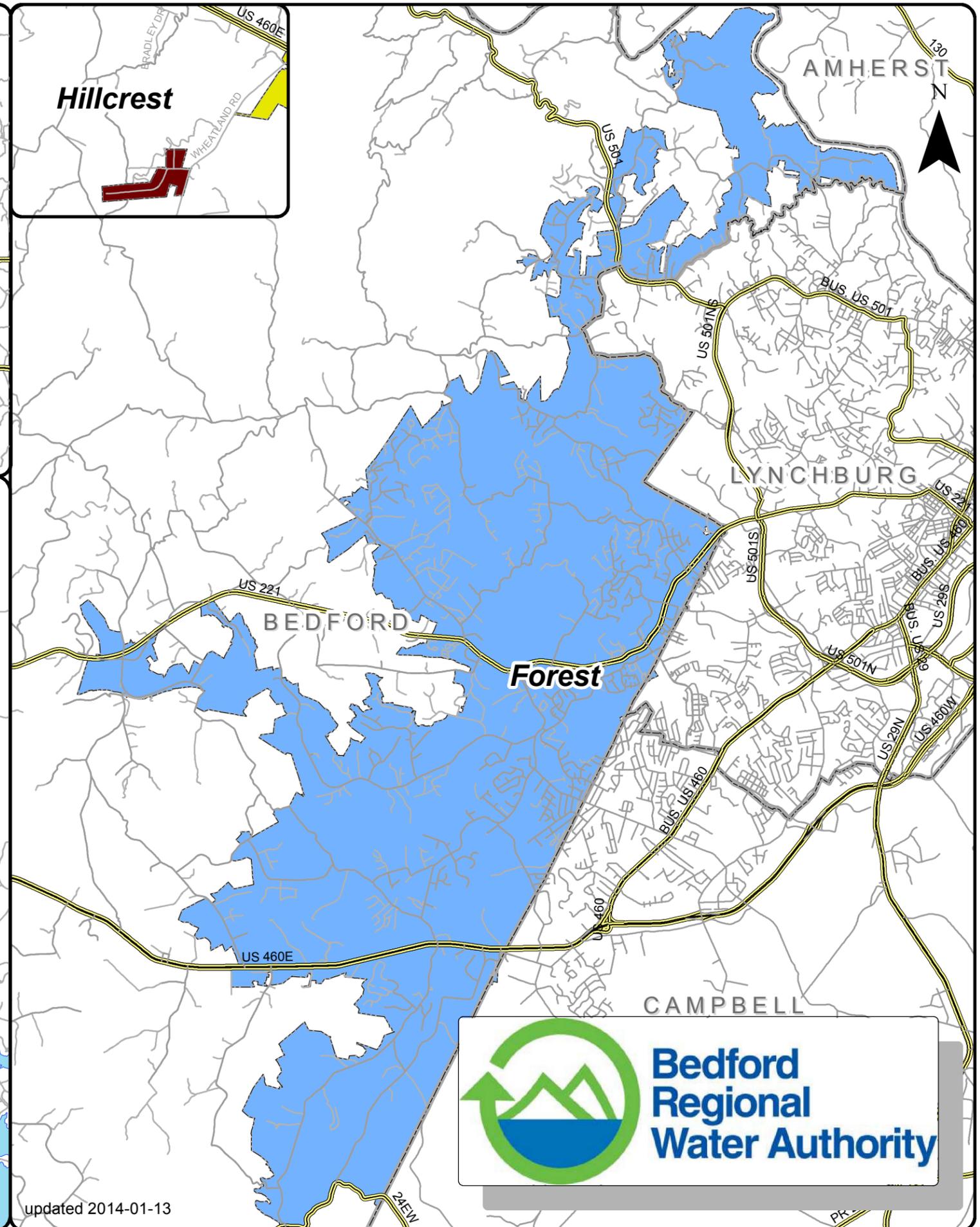
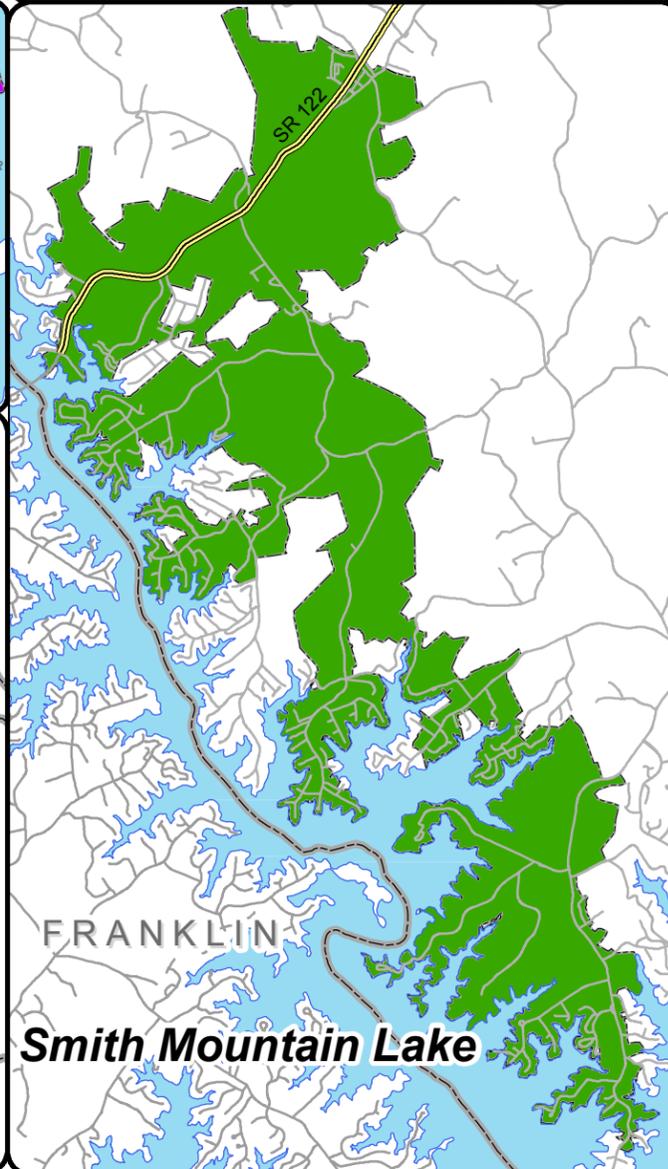
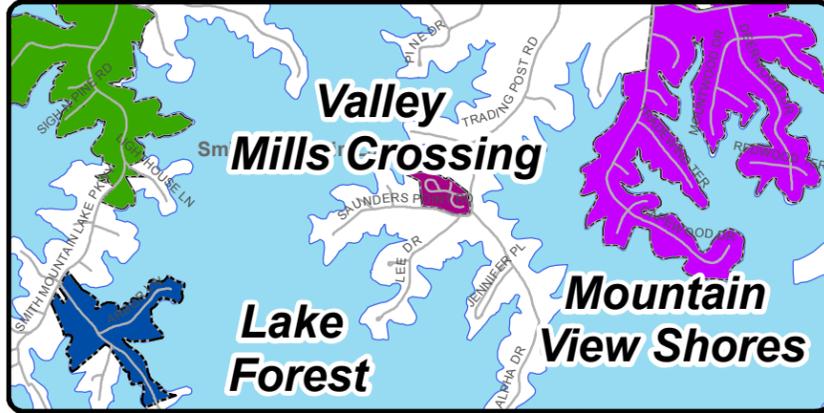
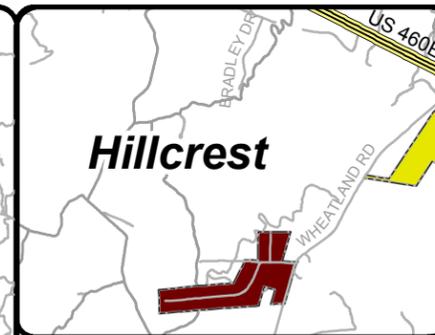
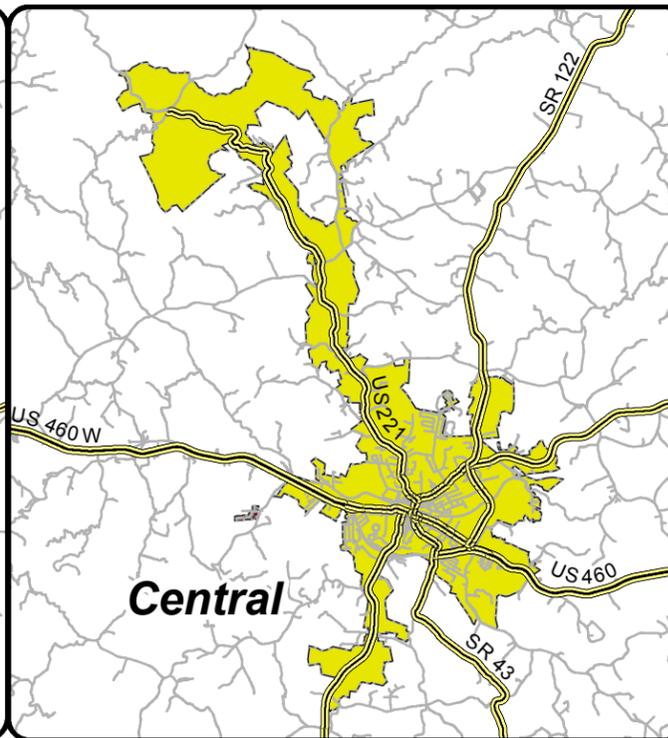
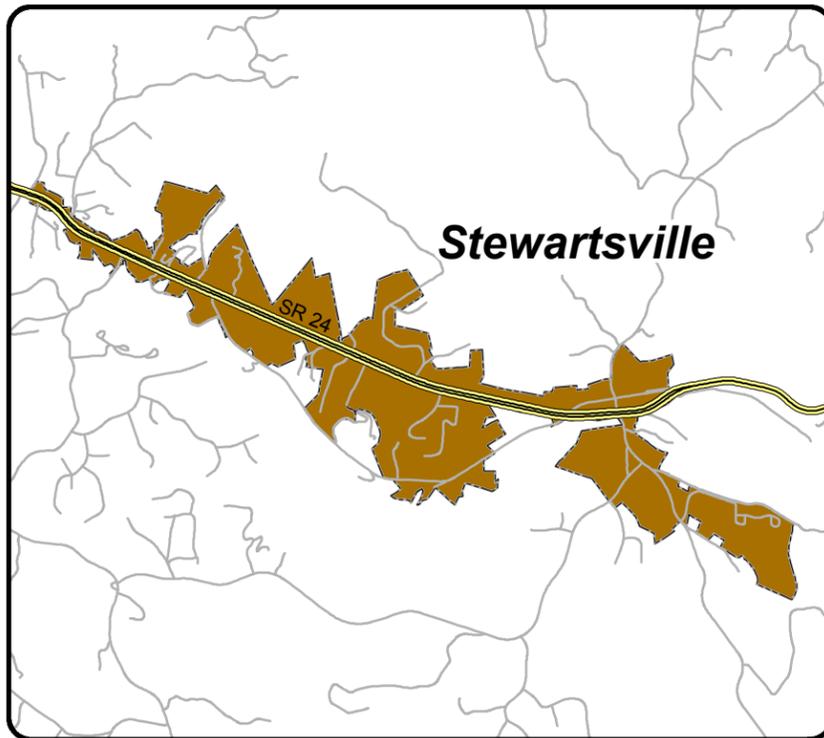
Emergency (Outside of operating hours)

540-586-7679, Extension 9

- Water outages
- Reporting a leak
- Sewer service disruptions

Website: www.brwa.com

If you have questions about this report or need any additional information about any aspect of your drinking water or want to participate in decisions that may affect the quality of your drinking water, please contact the Bedford Regional Water Authority at (540)-586-7679. Any other questions you may have concerning your water quality may be addressed via email at customerservice@brwa.com.



updated 2014-01-13



Vulnerable Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).



Important Information About Lead and Copper

Lead (ppb)- Copper (ppm)- If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Bedford Regional Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.



Violation Information

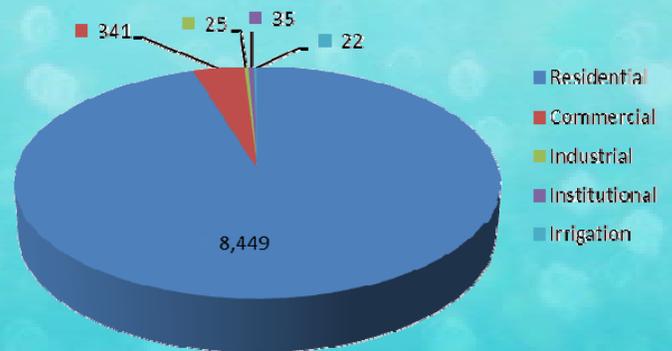
No violations were incurred for any of the waterworks systems in 2013.



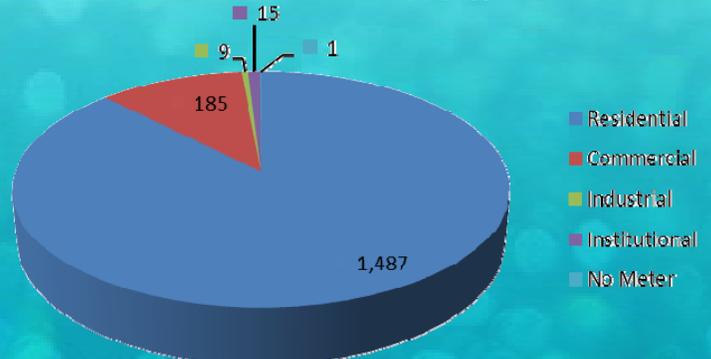
Did You Know that in 2013 the Authority*...

- Had 8,872 water connections.
- Had 1,697 sewer connections
- Employed 56 people
- Produced 718,179,000 gallons of water
- Treated 159,967,000 gallons of wastewater
- Added 144 water connections
- Added 52 sewer connections
- Read 54,216 meters
- Installed or changed out 488 meters
- Processed 56,765 payment transactions
- Had 245 miles of water lines
- Had 62 miles of sewer lines

Number of Water Customers by Type



Number of Sewer Customers by Type



*This information is based off the fiscal year 2012-2013 for the Bedford County Public Service Authority.



Sources of Your Drinking Water

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water and provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Hillcrest Subdivision

The source of your drinking water is a groundwater source provided by two wells. The water is treated with chlorine, soda ash, and a blended phosphate product before entering the distribution system.

Mountain View Shores

The source of your drinking water is a groundwater source provided by three wells. Water from two wells is filtered using greensand pressure filters and treated with chlorine, soda ash, permanganate, and a blended phosphate product before entering the distribution system. Water from one of the three wells is untreated.

Forest Central Water System

The Authority buys the water it provides you from the City of Lynchburg. The primary source of water is the 125-acre Pedlar Reservoir (surface water source), located on approximately 500 acres; this water is transmitted to Lynchburg by gravity in a 21-mile pipeline from a mountain location in Amherst. When additional water is needed, it is withdrawn from the James River. The City treats the water at two water treatment plants: the College Hill Filtration Plant and the Abert Filtration Plant.

Smith Mountain Lake Central Water System

The source of your drinking water is provided by Smith Mountain Lake, a reservoir maintained by American Electric Power for generation of hydroelectric power. The water is treated at Highpoint Water Treatment Plant. It is one of the few membrane filtration plants in the state designed to treat surface water in accordance with the Safe Drinking Water Act and all other Virginia Department of Health guidelines. The process requires no chemical addition except chlorine for disinfection and potassium permanganate, so the process waste consists of only concentrated lake sediment.



Sources of Your Drinking Water, Continued

Valley Mills Crossing

The source of your drinking water is a groundwater source provided by one well. The water is treated with chlorine before entering the distribution system.

The Town of Bedford (Formerly the City of Bedford)

The main water source is the Stoney Creek Reservoir located in Bedford County, which is a surface water source. The Authority has a supplemental source located in Bedford County that is used presently during periods of dry weather. This source is the Big Otter river and five drilled wells near the intake point of the Big Otter river.



For Hillcrest Subdivision, Mountain View Shores, Forest Central Water System, Smith Mountain Lake Central Water System, Valley Mills Crossing, and the Town of Bedford:

A source water assessment was conducted for each of these systems in 2002 by the Virginia Department of Health. The wells and reservoirs were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program.

Each Source Water Assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last 5 years. The reports are available by contacting the Authority at the phone number or address given elsewhere in this drinking water quality report.

For Stewartsville

The Authority purchases the water it provides you from Western Virginia Water Authority (“WVWA”). The primary source of your drinking water is provided by 21-acre Falling Creek Reservoir, a surface water source located in Bedford County east of Vinton. It is fed by Beaver Reservoir that covers 69 acres. The treatment process is a conventional sand filter, with a capacity of 1.5 million gallons a day. WVWA can also supply water to the Authority for Stewartsville from their Crystal Springs, Carvins Cove, and Spring Hollow water supplies. Source water assessments (“SWA”) have been prepared for all of these supplies; they determined that the WVWA’s water sources are susceptible to contamination. This designation does not mean that the source water has been impacted or that it will be impacted. It means that if there is a release of pollutants in the assessment area, the source water could be impacted. The VDH completed a SWA of Spring Hollow Reservoir’s water source, the Roanoke River, and determined that the Roanoke River may be susceptible to contamination because it is surface water exposed to a wide array of contaminants at varying concentrations. Also, changing hydrologic, hydraulic, and atmospheric conditions promote migration of contaminants from land use activities of concern into the Roanoke River. The SWA also determined that the wells might be susceptible to contamination because they are located in areas that promote migration of contaminants from land use activities of concern. More specific information about the SWAs may be obtained by contacting the Western Virginia Water Authority’s Water Division at 540-853-5700.





Definitions

Contaminants in your drinking water are routinely monitored according to federal and state regulations. In the following tables and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

BDL—Below detection level.

Non-detects (ND): Lab analysis indicates that the contaminant is not detectable, based on the limits of the analytical equipment used.

Parts per million (ppm) or Milligrams per liter (mg/l): One part per million corresponds to one minute in two years or one penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter (µg/l): One part per billion corresponds to one minute in 2,000 years, or one penny in \$10,000,000.

Picocuries per liter (pCi/L): Picocuries per liter is a measure of the radioactivity in water.

Nephelometric Turbidity Unit (NTU): Nephelometric turbidity unit is a measure of the cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Variations and exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Maximum Residual Disinfectant Level Goal (MRDLG): The maximum level of a disinfectant added for water treatment, below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Maximum Residual Disinfectant Level (MRDL): The maximum level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Secondary Maximum Contaminant Level (SMCL): The highest level recommended for a contaminant in drinking water, based on aesthetic considerations.

The Authority routinely monitors for various contaminants in each water supply to meet all regulatory requirements. Most of the water quality results in the tables are from testing done in 2013. However, the state allows the Authority to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the results, though representative, are more than one year old. The tables list only those contaminants that had some level of detection within the last five years. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.



The following information in the charts covers the time period January 2009 through December 2013



Water Quality Results: Forest Central Water System (PWSID # 5019315) (1 of 2)

Constituents/ Unit of Measure	V i o l a t i o n	Level Detected		AL	MCLG	MCL	MDRL	Likely Source of Contamination
		Abert	College Hill					
Inorganic Contaminants								
Chlorine, ppm	N o	Range 0.06 – 1.73 Highest Average : 1.07		—	—	—	4	Water additive to control microbes
Nitrate + Nitrite (as Nitrogen), ppm	N o	0.07	0.08	—	10	10	—	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Fluoride, ppm	N o	Average: 0.86 Range: 0.60 – 1.18	Average: 0.87 Range: 0.47 – 1.02	—	4	4	—	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Lead, ppb	N o	90 th percentile value = 1 0 above action limit		15	0	—	—	Corrosion of household plumbing systems, erosion of natural deposits
Copper, ppm	N o	90 th percentile value = 0.05 0 above action limit		1.3	1.3	—	—	Corrosion of household plumbing systems, erosion of natural deposits
Microbiological Contaminants								
Turbidity, NTU	N o	(highest level): 0.16 100% <0.3	(highest level): 0.10 100% <0.3	—	n/a	TT	—	Soil runoff
No single sample can be greater than 1 NTU. At least 95% of the samples taken every month must be less than 0.3 NTU								
Volatile Organic Contaminants								
Trihalomethanes (TTHM), ppb	N o	Range: 16-63 Highest Average: 36		—	0	80	—	By-product of drinking water disinfection
Haloacetic Acids (HAA), ppb	N o	Range: 12-40 Highest Average: 28		—	0	60	—	By-product of drinking water disinfection
Radioactive Contaminants (Results from 2009)								
Gross Alpha, pCi/L	N o	0.4(+/-)0.3	0.1(+/-)0.3	—	0	15	—	Erosion of natural deposits
Gross Beta, pCi/L	N o	2.5(+/-)0.8	0.9(+/-)0.7	—	0	50	—	Decay of natural and man-made deposits
Radium-228, pCi/L	N o	0.2(+/-)0.6	0.3(+/-)0.6	—	0	5	—	Erosion of natural deposits
Disinfection By-Product Precursors								
Total Organic Carbon (ppm) (TOC) Raw water, ppm	N o	Highest Avg.= 1.71 Range= 1.01-2.04	Highest Avg.= 1.65 Range= 1.01-2.06	—	N/A	TT	—	Naturally present in the environment
Total Organic Carbon (ppm) (TOC) Treated, water ppm	N o	Highest Avg.= 0.94 Range= 0.65-0.96	Highest Avg.= 0.87 Range= 0.60-1.07	—	N/A	TT	—	Naturally present in the environment



Water Quality Results: Forest Central Water System (PWSID # 5019315) (2 of 2)

Constituents (Unit of measure)	Violation	Level Found (range)	AL	MCLG	MCL	Date of Sample	Likely Source of Contamination
The following data was collected by the Bedford County Public Service Authority/Bedford Regional Water Authority							
Microbiological Contaminants							
Total Coliform Bacteria Presence or absence	No	One positive in February 2013	---	0	1 positive monthly sample	Monthly 2013	Naturally present in the environment
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomethanes	NO	68 12-86	---	0	80	Quarterly 2013	By-product of drinking water chlorination disinfection
HAA5 (ppb) Haloacetic Acids	NO	41 21-51	---	0	60	Quarterly 2013	By-product of drinking water chlorination disinfection
Chlorine (ppm)	NO	1.0 Average 0.3-1.5	---	MRDLG-4	MRDL=4	Monthly	Water additive used to control microbes
Inorganic Contaminants							
Lead (ppb)	NO	90th percentile value = 3 Of 31 samples none were above AL	15	0	---	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	NO	90th percentile value = .05 of 31 samples none were above AL	1.3	1.3	---	August 2011	Corrosion of household plumbing systems; erosion of natural deposits





Water Quality Results: Hillcrest Subdivision (PWSID #5019425)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Violation	Date of Sample	Typical Source of Contamination
Inorganic Contaminants						
Barium (ppm)	2	2	.03	No	May 2012	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nitrate (ppm)	10	10	1.5	No	August 2013	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Copper (ppm)	1.3	AL=1.3	0.2 (90th percentile) Of five samples none were above AL	No	August 2011	Corrosion of household plumbing systems, erosion of natural deposits
Lead (ppb)	0	AL=15	3 (90th percentile) Of five samples none were above AL	No	August 2011	Corrosion of household plumbing systems, erosion of natural deposits
Fluoride (ppm)	4	4	.1	No	May 2012	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Disinfection Products, Precursors, and Residuals						
Chlorine (ppm)	MRDLG=4	MRDL=4	Average= 1.1 Range= 0.4-2.2	No	Monthly	Water additive used to control microbes
TTM (ppb)	N/A	80	2.3	No	July 2013	By-product of drinking water disinfection
Radio active Contaminants						
Alpha emitters (pCi/L)	0	15	1.3	No	May 2012	Erosion of natural deposits
Combined radium (pCi/L)	0	5	1.8	No	May 2012	Erosion of natural deposits
Unregulated Contaminants						
pH (pH units)	na	SMCL 6.5-8.5	Average 7.0 Range-7.0-8.0	No	daily	Acidity or basicity of water
Hardness (ppm)	na	na	Average 74 Range-65-90	No	monthly	Measurement of naturally occurring hardness metals
<p>A sample collected in May 2012 indicated the sodium in the treated water 35.6 mg/L . This is above the EPA recommended optimal level of less than 20 mg/l for sodium in drinking water, which is established for those individuals on a “strict” sodium intake diet.</p>						



Water Quality Results: Mountain View Shores (PWSID #5019685)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Inorganic Contaminants							
Copper (ppm)	1.3	AL = 1.3	0.4 (90th percentile)	Of five samples collected none were above AL	No	August 2013	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	0	AL = 15	0.6 90th percentile	Of five samples collected none were above AL	No	August 2013	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride (ppm)	4	4	.22	n/a	No	February 2011	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and alumi- num factories
Barium (ppm)	2	2	.004	n/a	No	February 2011	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium (ppb)	100	100	4	n/a	No	February 2011	Discharge from steel and pulp mills; Erosion of natural deposits
Radioactive Contaminants							
Gross alpha (pCi/L)	0	15	0.4	n/a	No	February 2012	Erosion of natural deposits
Combined Radi- um (pCi/L)	0	5	0.4	n/a	No	February 2012	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomethanes	0	80	5	0	No	October 2013	By-product of drinking water disinfection.
HAA5 (ppb) Haloacetic acids	0	60	3	0	No	October 2013	By-product of drinking water disinfection.
Chlorine (ppm)	MRDLG=4	MRDL-4	0.9	0.4-1.2	No	Monthly	Water additive used to control microbes
Unregulated Contaminants							
Hardness (ppm)	n/a	n/a	84	62-113	No	Monthly	Measurement of naturally occur- ring hardness metals
pH (pH units)	n/a	6.5-8.5, as shown on the Hillcrest table	7.0	SMCL 6.5-8.5	No	Daily	Acidity or basicity of water
A sample collected in February 2011 indicated the sodium in the treated water is 48 mg/L. This is above the EPA recommended optimal level of less than 20 mg/L for sodium in drinking water, which is established for those individuals on a "strict" sodium intake diet.							



Water Quality Results: Smith Mountain Lake Central Water System (PWSID #5019400)

Contaminant (Unit of Measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of
Microbiological Contaminants							
Total Coliform Bacteria Presence or absence	0	1 positive monthly sample	1 positive in July 2013	n/a	No	Monthly	Naturally present in the environment
Turbidity (NTU)	n/a	TT	0.188 NTU 100% < 0.5	n/a	No	Continuously monitored	Soil runoff
Disinfection By- Products, Precursors, and Residuals							
THM (ppb) Trihalomethanes	0	60	59	38-137	No	Quarterly	By-product of drinking water disinfection
HAA5 (ppb) Haloacetic Acid	0	80	57	37-85	No	Quarterly	By-product of drinking water disinfection
Chlorine (ppm)	MRDLG =4	MRDL=4	0.77	0.14-1.21	No	Monthly 2013	Water additive used to control microbes
Inorganic Contaminants							
Lead (ppb)	0	AL=15	5 (90th percentile) Of twelve none were above the action level	2.2-5.1	No	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	1.3	AL=1.3	1.1 (90th percentile) Of twelve one was above the action level	0.05-1.4	No	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Nitrate (ppm)	10	10	0.62	n/a	No	July 2013	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	2	2	.03	n/a	No	July 2013	Discharge of drilling waste; Discharge from metal refineries; Erosion of natural deposits
Fluoride	4	4	0.12	n/a	No	July 2013	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Radioactive Contaminants							
Alpha emitters (pCi/l)	0	15	.1	n/a	No	July 2009	Erosion of natural deposits
Combined radium (pCi/l)	0	5	.8	n/a	No	July 2009	Erosion of natural deposits
Unregulated Contaminants							
pH (pH units)	na	SMCL 6.5-8.5, as shown on the Hillcrest table	7.0 average	7.1-8.1	No	Daily	Acidity or basicity of water
Hardness (ppm)	na	na	77 average	62-113	No	monthly	Measurement of naturally occurring hardness metals



Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (1 of 2)

Parameter	Spring Hollow			Carvins Cove			Falling Creek			Crystal Spring		
	Max	Min	AVG	Max	Min	AVG	Max	Min	AVG	Max	Min	AVG
Coliform Total			3			3						
E. Coli						1						
pH	7.7	7.5	7.6	8.0	7.5	7.8	7.5	7.2	7.4	7.9	7.7	7.8
Alkalinity Total	130	124	126	49	36	44	22	15	17			121
Chlorate ug/L	0	37	8	0	89	33						
Chloride			9.9			4.19			3.43			7.48
Chlorine	1.3	1.1	1.2	1.4	1.1	1.3	1.4	1.2	1.2	1.2	1.0	1.1
Chlorite ug/L	0	62	1	0	190	86						
Color			ND			ND			5			ND
Conductance umhos/cm			302.1			120.3			82.24			269.7
Corrosion Index(Langelier)			0			-0.71			-1.98			-0.1
Fluoride	0.7	0.7	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.7	0.6	0.7
Hardness, Calcium			90			30			8			74
Hardness Total	156	150	154	54	41	47	18	13	15	137	136	137
Ortho Phosphate as P			ND	0.3	0.2	0.3	0.3	0.2	0.2			ND
Sulfate			16.9			11.2			8.07			3.23
Turbidity	0.13	0.07	0.08	0.15	0.09	0.10	0.28	0.1	0.15	0.094	0.01	0.03
TDS			170			86			58			161
TOC	0	1.29	0.00	0	2.02	0.00	0	1.9	0.00			
Nitrate/Nitrite			0.4			ND			ND			0.71
0=NON DETECT												
Cyanide			ND			0.008			ND			ND
Aluminum			ND			ND			ND			ND
Antimony			ND			ND			ND			ND
Arsenic			ND			ND			ND			ND
Barium			0.0333			0.0491			0.0171			0.0366
Beryllium			ND			ND			ND			ND
Cadmium			ND			ND			ND			ND
Chromium			ND			ND			ND			ND
Copper			0.0044			ND			0.0095			0.0058
Iron			ND			ND			0.0314			ND
Lead			ND			ND			ND			ND
Manganese			0.0007			0.0006			0.0088			ND
Mercury			ND			ND			ND			ND
Nickel			0.0015			ND			ND			0.0014
Selenium			ND			ND			ND			ND
Silver			ND			ND			ND			ND
Sodium			5.72			6.88			11.7			3.76
Thallium			ND			ND			ND			ND
Zinc			ND			ND			0.1639			ND
Gross Alpha			<0.9			-0.78			<0.5			1.1
Gross Beta			2.4			1.5			1.8			1.8
Radium 226						0.03						
Radium 228			<0.6			0.79			<0.6			0.8
Gross Alpha + Radon & U												
TTHM ppb	(20-78) LRAA range (9-86) site range											
HAA5 ppb	(4-53) LRAA range (3-57) site range											
SOC	ND			ND			ND			ND		
Carbamates												
Pesticides & PCB's												
Diquat												
Herbicides												
VOC'S			ND			ND			ND			ND



Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (2 of 2)

Constituents (Unit of measure)	Violation	Level Found (range)	AL	MCLG	MCL	Date of Sample	Typical Source of Contamination
The following data was collected by the Bedford County Public Service Authority/ Bedford Regional Water Authority.							
Disinfection By-Products, Precursors, and Residuals							
HAA5 (ppb)	no	13 7-24	—	0	60	Quarterly 2013	By-product of drinking water chlorination disinfection
Haloacetic Acids							
TTHM (ppb)	no	77 44-93	—	0	80	Quarterly 2013	By-product of drinking water chlorination disinfection
Trihalomethanes							
Chlorine (ppm)	no	0—0.7 Range		MRDLG =4	MRDL=4	Monthly	Water additive used to control microbes
Inorganic Contaminants							
Lead (ppb)	no	90th percentile value = 2 Of five none above AL	15	0	—	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	no	90th percentile value = 0.08 Of five none above AL	1.3	1.3	—	August 2011	Corrosion of household plumbing systems; erosion of natural deposits





Water Quality Results: Valley Mills Crossing (PWSID #5019875)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Inorganic Contaminants							
Copper (ppm)	1.3	AL=1.3	0.9 (90th percentile)	Of six samples one was above AL	No	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	0	AL=15	10 (90th percentile)	Of six samples none were above AL	No	August 2011	Corrosion of household plumbing systems; erosion of natural deposits
Nitrate (ppm)	10	10	1.7	N/A	No	August 2013	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	2	2	0.005	N/A	No	April 2012	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Radioactive Contaminants							
Alpha emitters (pCi/L)	0	15	.6	n/a	No	April 2011	Erosion of natural deposits
Combined radium (pCi/L)	0	5	1.3	n/a	No	April 2011	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomeanes	0	80	3	N/A	No	August 2013	By-product of drinking water disinfection
HAA5 (ppb) Haloacetic	0	60	20	n/a	No	August 2013	By-product of drinking water disinfection
Chlorine (ppm)	MRDLG=4	MRDL=4	0.9	0.3-1.1	No	Monthly	Water additive used to control microbes
Volatile Organic Contaminants							
Total Xylene (ppm)	10	10	0.006	N/A	No	October 2013	Discharge from petroleum factories ;Discharge from chemical factories
Unregulated Contaminants							
pH (pH Units)	n/a	6.5-8.5 SMCL	7.0 average	6.4-6.6 range	No	Daily	Acidity or basicity of water
Hardness (ppm)	n/a	n/a	86 average	73-94 range	No	Monthly	Measurement of naturally occurring hardness metals



Water Quality Results: Town of Bedford

TEST RESULTS

Contaminant / unit of measurement	Violation Y/N	Level Detected/Range	Sample Date	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants (ND)						
Total Coliform Bacteria	N	No samples total coliform present	Monthly at eight sample sites	0	Presence of coliform in no more than 1 sample per month	Naturally present in the environment and are used as an indicator that other potentially-harmful, bacteria that may be present.
Turbidity / NTU	N	0.29(highest level) 100 % < 0.3	Daily	NA	Max TT 0.3 in 95 % of monthly samples	Soil runoff
Inorganic Contaminants						
Copper (ppm)	N	0.122 (90 th percentile) Range=.03 - 0.125 Of the 10 samples collected none exceeded the AL	2011	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	N	2.0 (90 th percentile) Range = ND – 2.1 Of the 10 samples collected none exceeded the AL	2011	15	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride (ppm)	N	Average= 0.81 Range = 0.4 - 1.3	Daily	4	4	Water additive which promotes strong teeth
Nitrate – Nitrite (ppm)	N	0.25	2013	10	AL = 5	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	N	0.12	2013	2	2	Discharge of drilling waste. Discharge from metal refineries; Erosion of natural deposits
Disinfection Byproducts						
Chlorine (ppm)	N	Average=1.1 Range: 0.2 -1.8	Monthly at two sample sites	4	4	Chlorine is added to insure that water is disinfected
TTHM [Total Trihalomethanes] (ppb)	N	68 Range: 45 - 81	Quarterly 2013	N/A	80	By-product of drinking water chlorination
HAA5 [Haloacetic Acids] (ppb)	N	60 Range: 31 - 85	Quarterly 2013	N/A	60	By-product of drinking water chlorination
TOC Removal ratio Total Organic Carbon	N	Ave. Ratio: 1.26	Quarterly 2013	NA	TT- TOC Removal Ratio greater than or equal to 1	Naturally present in the source water

Physical and Mineral Characteristics for calendar year 2013

In addition to the required analysis that is mainly completed by independent labs we also conduct over 4,000 individual operational tests on your water during the year. The following constituents analyzed in your water on a daily basis are indicators of the appearance, taste and mineral content of the drinking water delivered to your tap.

Constituent (w/unit of measurement)	Frequency	Annual Average
pH, standard units	Every 4 hours	7.4
Alkalinity, ppm	Every 4 hours	25
Total Hardness, ppm	Once per day	34
Calcium Hardness, ppm	Once per day	30
CO2, ppm	Once per day	4
Iron, ppm	Once per day	0.01
Manganese, ppm	Once per day	0.1
Temperature, Celsius	Every 4 hours	12
Free Chlorine, ppm	Continuous monitor in addition to every 4 hours	1.7



Bedford Regional Water Authority

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